REMARKS

Amendments

After entry of the above amendment, Claims 1-13 and 15-20 are pending in the application and have been rejected.

Claim 1 has been amended by inserting the requirement that the charge control adjuvant is sparingly soluble in the liquid carrier and is present in the toner composition in an amount higher than the solubility of the charge control adjuvant in the liquid carrier. These features are described in originally presented claim 14 and in the specification at page 9, lines 15-17. Claim 14 has therefore been cancelled. It is respectfully submitted that this amendment does not introduce new matter.

Claim Rejections – 35 USC § 103

Claims 1, 6-10, 14, and 16-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in U.S. Patent 3,753,760 in view of Gibson in U.S. Patent 4,891,286.

Claims 1, 6-10, and 16-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in U.S. Patent 3,753,760 in view of Almog in U.S. Patent No. 5,792,584.

The present invention describes providing an element to the toner composition in addition to the charge director (i.e. in addition to the component that provides a charge to the particle). This additional element is not present to charge the particle, but instead is present to provide exceptional charge control benefits to the toner composition. It has surprisingly been found that by addition of acid or base components to negatively charged toner particles as described in the present specification, bulk conductivity and preferably charge per mass are reduced during printing operations, providing superior imaging performance. The claims have additionally been amended to require the limitation that the charge control adjuvant is sparingly soluble in the liquid carrier and is present in the toner composition in an amount higher than the solubility of the charge control adjuvant in the liquid carrier. As noted at page 9, lines 15-17 of the present

specification, charge control adjuvants that are sparingly soluble are surprisingly effective in providing the desired charge control properties.

The outstanding Office Action acknowledges that Kosel does not disclose the additional of a separate acid or a base that is a separate component from the toner particles. This reference therefore serves as a primary reference describing a conventional toner composition (relative to the present invention), and requires a separate invention to provide reduction of bulk conductivity of the liquid toner in the manner of the present claims.

Gibson discloses liquid toner dispersions in high-speed electrophotography wherein pigment charge homogeneity and mobility are stated to be improved by the addition of effective carrier liquid-insoluble monomeric organic acids to the toner solution. The organic acid as described in Gibson clearly is provided as an auxiliary charge director to increase the homogeneity and mobility of the charge of each particle, and is associated with the pigment-particle binder. This is stated in Gibson at column 3, line 67 to column 4, line 2:

> This factor makes it obvious that, in order to be effective, **the acids must be associated with the pigment-binder particle and not exist free in the continuous liquid phase.** Accordingly, I require that the acids be insoluble in the liquid carrier in order to facilitate contact with an agglomeration thereof with the pigment-binder particles. (emphasis added)

Thus, the acid of Gibson is associated with the toner particles, is not an ingredient separate from the toner particles, and therefore is not present in an amount to effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations. Further, the present claims now require that the charge control adjuvant is sparingly soluble in the liquid carrier and is present in the toner composition in an amount higher than the solubility of the charge control adjuvant in the liquid carrier. The acid of Gibson is stated to be insoluble in the liquid carrier, and therefore is further distinguished from the present composition.

Almog is similar to Gibson, in that performance of the toner particles, and in particular the stabilization of the charge director on the particles, is enhanced through the use of at least one stabilizing component in an amount effective to stabilize the electrical properties of the at least one charge director, the stabilizing component being selected from solubilizable acids. Thus, as in Gibson above, the stabilizing component acid is provided under processing conditions such that the stabilizing component acts as an auxiliary charge director to stabilize the unstable negative charge directors under high voltage conditions (see column 2, lines 20-21). This configuration is proven by the test described in Almog at Column 5, lines 23-24, where it was determined that under ordinary printing conditions (i.e., not under high voltage conditions), "Print quality was equal to that of toner without the additives." Thus, Almog fails to satisfy a first present claim requirement that the acid be an ingredient separate from the toner particles, and additionally a second claim requirement that the acid be present in an amount to effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

The above references individually and in combination fail teach the use of an acid or a base added as an ingredient separate from the toner particles and present in an amount effective to reduce the bulk conductivity of the liquid toner composition as the negatively charged toner particles are depleted during printing operations as presently claimed. Further, the references fail to teach or suggest the use of a charge control adjuvant that is sparingly soluble in the liquid carrier and is present in the toner composition in an amount higher than the solubility of the charge control adjuvant in the liquid carrier. One could not have predicted that charge control adjuvants that are sparingly soluble could be surprisingly effective in providing the desired charge control properties, as discovered in the present invention, from the teachings of the prior art.

Claims 1-5, 10-13, and 16-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Claims 1-5, 10-13, and 16-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Qian *et al.* in U.S. Patent Application Publication 2004/0091807 or Qian *et al.* in U.S. Patent Application Publication 2004/0091808 or Qian *et al.* in U.S. Patent Application Publication 2004/0091809 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Claims 1-5, 10-13, and 16-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Morrison *et al* in U.S. Patent Application Publication 2003/0134940 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

As previously discussed, the primary references describe conventional toner compositions (relative to the present invention), and require a separate invention to provide reduction of bulk conductivity of the liquid toner in the manner of the present claims.

Diamond and Weiss is a handbook that teaches the use of conventional materials for liquid toners, including the use of charge directors. As stated in the Office Action, this reference shows "that the addition of a separate acid or base is shown to be effective to give the desired charge on the toner particle." Thus, this textbook is consistent with other prior art uses of acids and bases in this context – for imparting a charge <u>on</u> the particle. Page 246 merely states that "charge control agents may then be added [to the particle] as required." Diamond and Weiss does not address bulk conductivity of the liquid toner composition at all. This reference therefore cannot provide a teaching with respect to the essential elements of providing a charge control adjuvant that is (1) an acid or a base added as an ingredient separate from the toner particles and (2) present in an amount effective to reduce the bulk conductivity of the liquid toner composition as the negatively charged toner particles are depleted during printing operations as presently claimed. Further, the references fail to teach or suggest the features of the claims as amended, i.e. wherein the charge control adjuvant is sparingly soluble in the liquid carrier and is present in the toner composition in an amount higher than the solubility of the charge control adjuvant in the liquid carrier. One could not have predicted that use of

such sparingly soluble charge control adjuvants in this manner could be surprisingly effective in providing the desired charge control properties, as discovered in the present invention, from the teachings of the prior art.

It is respectfully submitted that the references, even if combined, teach only the preparation of liquid toners using conventional charge directors, and fail to teach or suggest the unique toner compositions containing charge control adjuvants as presently claimed.

CONCLUSION

In view of the above remarks, it is respectfully submitted that the present application is in condition for allowance. Early favorable notice to that effect is earnestly solicited. In the event that a phone conference between the Examiner and the Applicant's undersigned attorney would help resolve any issues in the application, the Examiner is invited to contact said attorney at (651) 275-9811.

Respectfully Submitted,

Dated: June 12, 2006

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